Homework: Extra Credit

AST 422 Spring 2007

Calculate the value of $\Delta\rho/<\rho>$ for different scales given in the Ryden Fig 2.2 on page 10. The average density of the universe is: $<\rho>\sim 10^{-30}$ ($g\,cm^{-3}$).

(a) A sphere 3 m in diameter, centered on your navel.
You can assume the person has a mass of 80 (kg).

(b) A sphere 3 AU in diameter, centered on your navel.
The mass included can be estimated as the mass of Earth and the mass of the Sun.

(c) A sphere 3 Mpc in diameter, centered on your navel.
The mass included can be estimated as the mass of the Milky Way and the mass of the M31.

(*memo*) When you finally increased the diameter to 200 Mpc, the density inside becomes the order of the average for the Universe.
NO NEED TO SHOW THIS.